

# Rental Power 1500 kW



## Description

This Cummins Power Generation rental package is a fully integrated mobile power generation system, providing optimum performance, reliability, and versatility for standby and prime power applications.

The package utilizes custom designed switchgear and cooling system to meet robust customer requirements. This switchgear provides reconnectable voltage via a link board design, automatic start/stop control and easy connection to existing installations.

## Features

### Cummins diesel engines

- Rugged 4-cycle industrial diesel delivers reliable power and fast response to load changes.
- Equipped with normal duty air cleaners, bypass-type oil filters and dual-element fuel/water separator filtration system with 4-way valve.
- Includes jacket water heaters for more reliable operation in emergency standby applications.

### Control system

- The most advanced, reliable, and capable generator set control system available with parallel and Masterless Load Demand (MLD) capabilities
- Integrated generator set providing precise frequency and voltage regulation, alarm and status message display in one easy-to-operate customer interface.
- Auto shutdown at fault detection.

### Stamford alternators

- Designed and built by Cummins Generator Technologies.
- Voltage - 480 VAC standard, 600/480 VAC switchable optional.
- Alternators designed for improved motor starting.
- Permanent magnet excitation for improved performance in cyclic and non-linear load applications.

### Rental package enclosure

- Designed for serviceability access.
- Optimized fuel capacity.
- Engine compartment fluid containment design for greater environmental protection.
- Sound attenuated to minimize impact on local environment.
- Vertical cooling air and engine exhaust path to minimize sound level adjacent to the container.
- Equipped with 24 VDC lighting.
- Shore Power 100 amp service breaker panel - single phase 120/240 VAC: (2) 30 amp breakers (1 for each coolant heater- 240 VAC 26.75 amp = 6420 watts for each heater). (1) 15 amp breaker – 120 VAC (GFIs), (1) 15 amp breaker – 120 VAC (battery charger).

## Options

### Cold weather package includes:

- Additional diesel fired block heater
- Battery heating pad
- Floor insulation
- Actuated louver control
- Transport Canada UN31A certified fuel tank

Model	Voltages (V)	Standby Rating		Prime Rating		Engine model	Alternator model	Generator* Specification Sheet (Ref)
		60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)			
C1500D6RG	480	1500 (1875)		1350 (1688)		QSK50-G4	PI734C	S-1512
	600	1500 (1875)		1350 (1688)			PI734F	

\* Not all reference data is applicable.

## Generator set specifications

Governor regulation class	ISO8528 Part 1 Class G3
Voltage regulation, no load to full load	±0.5%
Random voltage variation	±0.5%
Frequency regulation	Isochronous
Random frequency variation	±0.25%
Radio frequency interference	IEC 801.2, through IEC 801.5, MIL STD 461C, Part 9

## Engine specifications

Engine model	QSK50-G4
Engine data sheet	DS-6606
EPA Nonroad	TPEM (Tier 2)
Design	4 cycle, V-block, turbocharged and low temperature after-cooled
Bore	159 mm (6.25 in.)
Stroke	159 mm (6.25 in.)
Displacement	50.3 liters (3067 in <sup>3</sup> )
Cylinder block	Cast iron, 60V, 16 cylinder
Battery capacity	8D (qty: 4) 1250 CCA @ 0 °F and 1500 CCA @ 32 °F
Battery charging alternator	24 volt 55 amp Delco Remy
Starting voltage	24 volt, negative ground
Fuel system	Cummins' Modular Common Rail
Fuel filter	Three stage filtration. Stage 2: Triple element, 3 micron, spin on filters. Stage 1: Triple element, 7 micron, Industrial Pro filters with water separators. Stage 0: Additional dual element, 25 micron, Industrial Pro filters with water separators and shut-off valve.
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Four spin-on combination full-flow and bypass filters
Oil capacity	235L (248 qt)
Standard cooling system	113 °F (45 °C)

## Alternator specifications

Alternator data sheet	ADS-331 (480 VAC), ADS-334 (600 VAC)
Design	Brushless, 4-pole, revolving field
Stator	Double layer lap 2/3 pitch
Rotor	Single bearing, flexible disc
Insulation system	Class H per NEMA MG1-1.65 (480 and 600 VAC)
Standard temperature rise	150/40 °C standby (480 and 600 VAC)
Exciter type	PMG (Permanent Magnet Generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal fan
Waveform distortion	No load < 1.5%, non-distorting balanced linear load < 5.0%
Telephone influence factor (TIF)	< 50 per NEMA MG1-22.43
Telephone harmonic factor (THF)	< 2%

## Power capability specifications

	Standby rating			
	240 V, 1 phase Amps	208 V, 3 phase Amps	480 V, 3 phase Amps	600 V, 3 phase Amps
<b>C1500D6RG</b>			2255	1804

## Electrical power panel specifications

Model voltage	120 V duplex receptacles	240 V twist	Load lug connection (stud diameter)	Load lug circuit breakers
480 V	2 (15 amp)		1/2	2500 amp
600 V	2 (15 amp)		1/2	2500 amp

## Site derating factors

Standby application: Engine power available up to 562 m (1844 ft) at ambient temperatures up to 45 °C (113 °F). Above these elevations, derate at 6.6% per 305 m (1000 ft) and 14.0% per 10 °C (18 °F).

Prime application: Engine power available up to 562 m (1844 ft) at ambient temperatures up to 41 °C (106 °F). Above these elevations, derate at 6.6% per 305 m (1000 ft) and 14.0% per 10 °C (18 °F).

## PowerCommand 3.3 Control System



An integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1570 for more detailed information on the control.

**Masterless Load Demand (MLD)** - Enables generator sets to smartly manage power from paralleled generators to match varying load patterns, enabling units to start/stop automatically based on load demand.

**AmpSentry** – Includes integral AmpSentry protection, which provides a full range of alternator, which provides a full range of alternator protection functions that are matched to the alternator provided.

**Power management** – Control function provides battery monitoring and testing features and smart starting control system.

**Advanced control methodology** – Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

**Communications interface** – Control comes standard with PCCNet and Modbus interface.

**Regulation compliant** – Prototype tested: UL, CSA and CE compliant.

**Service** - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

**Easily upgradeable** – PowerCommand controls are designed with common control interfaces.

**Reliable design** – The control system is designed for reliable operation in harsh environment.

**Multi-language support**

### Operator panel features

#### Operator/display functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

#### Paralleling control functions

- First Start Sensor System selects first genset to close to bus
- Phase Lock Loop Synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVar load sharing
- Load govern control for utility paralleling
- Extended Paralleling (baseload/peak shave) Mode
- Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions,

#### Alternator data

- Line-to-neutral and line-to-line AC volts
- 3-phase AC current
- Frequency
- kW, kvar, power factor kVA (three phase and total)

#### Engine data

- DC voltage
- Engine speed
- Lube oil pressure and temperature
- Coolant temperature
- Comprehensive FAE data (where applicable)

#### Other data

- Genset model data
- Start attempts, starts, running hours, kW hours
- Load profile (operating hours at % load in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower)

### Standard control functions

#### Digital governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

#### Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire line-to-line sensing
- Configurable torque matching

#### AmpSentry AC protection

- AmpSentry protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse var shutdown
- Field overload shutdown

#### Engine protection

- Battery voltage monitoring, protection and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown
- Full authority electronic engine protection

#### Control functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop
- Data logging
- Cycle cranking
- Load shed
- Configurable inputs and outputs (4)
- Remote emergency stop

#### Options

- Auxiliary output relays (2)

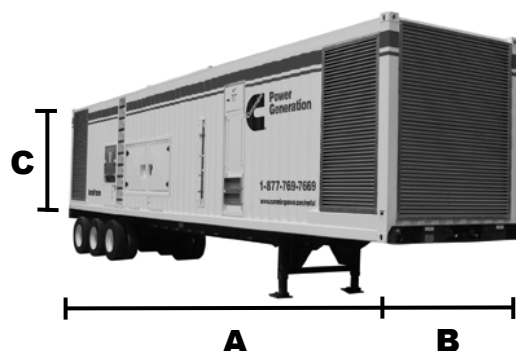
## Ratings definitions

### Standby:

Applicable for supplying emergency power for the duration of normal power interruption. No sustained overload capability is available for this rating. (Equivalent to Fuel Stop Power in accordance with ISO3046, AS2789, DIN6271 and BS5514). Nominally rated.

### Prime (unlimited running time):

Applicable for supplying power in lieu of commercially purchased power. Prime power is the maximum power available at a variable load for an unlimited number of hours. A 10% overload capability is available for limited time. (Equivalent to Prime Power in accordance with ISO8528 and Overload Power in accordance with ISO3046, AS2789, DIN6271, and BS5514).



## Dimensions

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Weight w/o fuel kg (lbs)	Weight with fuel kg (lbs)	Fuel capacity liters (gal)
<b>C1500D6RG</b>	14630 (576)	2438 (96)	2896 (114)	26880 (59260)	32105 (70780)	6174 (1631)
<b>With chassis</b>	14630 (576)	2438 (96)	4064 (160)	31044 (68440)	36269 (79960)	6174 (1631)

Note: Optional Transport Canada fuel tank capacity 1250 gallons

## Fuel consumption

60 Hz Ratings, kW (kVA)	Load	Standby				Prime			
		1500 (1875)				1350 (1687)			
		1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
	US Gal/hr	32	58	80	104	29	53	71	95
	L/hr	121	219	303	394	110	201	269	360

## Specifications

Model	kW rating		Sound level at full load	Sound level at no load	Tier rating	Hours of operation (75% load)	
	Standby	Prime	dB(A) @ 7 m	dB(A) @ 7 m	Standby	Standby	Prime
<b>C1500D6RG</b>	1500	1350	74	71	TPEM (Tier II)	20	22
						With Transport Canada fuel tank	
						15	17






## Accessories

Name	Part Number
48 ft. Air Ride Chassis	0410-1380
Fueling Ladder	0410-1372
Access Ladder*	0410-1371
Folding Ladder	0410-1362

\* One access ladder provided with purchase of unit

## Codes and standards

Below certifications are for generator set only

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins Power Generation products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.		Engine previously certified to U.S. EPA Nonroad Source Emissions Standards, 40 CFR 89, Tier 2. The engine used in this generator set may be used in mobile applications in accordance with the EPA Transition Program for Equipment Manufacturers (TPEM); this provision has specific limitations (see 40 CFR, 1039.625).
	All low voltage models are CSA certified to product class 4215.		

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